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COST AND MANAGEMENT

## Construction and Interpretation of Financial Statements

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*Clarkson, Gordon, Dilworth, Guilfoyle & Nash, Toronto*

(Before Toronto Chapter, March 21, 1932)

I HAVE been asked to talk to you today on the construction and interpretation of financial statements. I know of no subject which would take longer to discuss if all features were to be fully considered. I must however try to be as brief as possible consistent with dealing adequately with the more important points. It is hard to say which is the more important of the two questions, Construction or Interpretation. They are very closely allied and, of course, it is quite clear that without a properly constructed statement any intelligent interpretation is quite impossible.

I shall endeavor to deal with these two questions separately and in doing so shall try to indicate to you the difference in financial statements of public companies, statements of private companies and statements prepared for special purposes. I shall also endeavour to discuss briefly the more important points in a balance sheet which will be looked for by the present shareholders, possible new investors and creditors, and to show the importance of accurate cost accounting in the preparation of financial statements.

### Purpose of a Balance Sheet

It is important to keep in front of us the real purpose in the preparation and presentation of a financial statement. A balance sheet can be briefly described as a summarization of the accounts of a business concern. It should present in convenient form information as to what the business owns,—what is owed to it and what it owes, and should analyze the nature of the assets and indicate their worth to the business. It should disclose the liabilities in such a way that the reader can apply his own measure of intelligence to form a reasonable opinion as to the financial condition and the stability of the business and determine the extent of confidence which he may be justified in expressing in the business undertaking. The balance sheet is above all things a presentation of facts and they should be set out with sufficient clearness to enable anyone reading it to at least understand the salient features.

In a lecture given by Mr. H. R. Cumming, F.S.A.A., F.F.I.A., to the Queensland Accountants and Secretaries Society about a year ago, he pointed out amongst other things that while due regard may be given to the figures presented in the statement it is important to note whether the statement bears a certificate of audit, and where there is a certificate what, if any, qualifications it contains and whether reference is made in it to a separate report, which of course must be accepted as a note of warning. In such case it would be clearly impossible to understand or to analyse the statement without reference to and a study of such a report. I have seen many cases where statements have been published in the press with auditors' certificates referring to reports but without the reports being also

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published. This in my view is wrong and in such cases I would warn you all that you should not try to analyze or to pass an opinion on the statement unless you also have an opportunity of seeing the report. You may be sure that if the auditor's certificate cannot be given on the face of the statement there is either some reservation which the auditor has to make which would affect the value of some asset or some reference which might have an important bearing on the net worth of the business.

Statements are of course issued from time to time which disguise the real facts in connection with a business instead of disclosing the true condition, but these are now-a-days, I am glad to say, rare. Most balance sheets with auditors' certificates can be accepted as a reasonably true indication of the state of the business. On the other hand, it is regrettable that there are so many different ways and so much difference in the manner in which balance sheets can be presented, and I believe it would be a good thing for business generally as well as for the accounting profession if greater effort were made to obtain more uniformity in the method of presentation of financial statements.

I think it is fair to say that very great progress has been made in recent years towards standardization in form, and frequent exchange of ideas through the medium of our publications and pamphlets has done much to bring this about. I cannot urge you too strongly the advisability of continuing this work. I am confident that its accomplishment will be gratefully accepted by all those classes of people who today are floundering in their efforts to follow the kaleidoscopic presentations in almost every conceivable form of the balance sheets issued these days. We must bear in mind, of course, that complete standardization is almost impossible. We cannot present the facts of all types of businesses in quite the same form—different groupings must be used in public utility companies, manufacturing, industrial and financial companies, but the same principles can be followed.

The most important feature of all is that sufficient information should be given to enable the reader or critic to interpret the statement properly,—that is, the information should be arranged logically and described in understandable language; so far as possible the construction from year to year should be substantially in the same form so that comparisons may be made; and finally, the statement should be as short as the facts will justify. Long and detailed statements are confusing and frequently mislead instead of help the reader.

### Construction of Financial Statements

#### Statutory Requirements in Balance Sheet Construction

The Dominion Companies Act as well as the companies acts of several of our Provinces make certain stipulations as to what information shall be given to shareholders and in what form the balance sheet shall be drawn up. This legislation has undoubtedly assisted in providing shareholders and investors with more adequate information; it is not unduly restricted in its requirements nor does it make unreasonable demands on directors or auditors. It has, I think, assisted to some extent in bringing about standardization. I do not propose to deal here with the requirements of the different Acts, which differ in minor points, but merely to draw your attention to it as an important feature to be studied by the one responsible for the construction and preparation of statements to shareholders.

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### Balance Sheets of Public Companies

In recent years there has been a tendency to so condense the balance sheet of a public company as to conceal by too much summarization the nature and the value of the assets or the character of the liabilities, and this practice is to be condemned. It has grown up partly because of the difficulty experienced by auditors in setting out the full facts without presenting too big and complicated a statement, and this is to some extent the result of the growth in the size of many of our larger companies. In the last few years some of our public companies have grown to the point where their assets run into tens of millions and in a few cases into hundreds of millions and when this occurs it is naturally more difficult for the auditors to separate the assets and liabilities in such a manner as to expose all the necessary facts without giving a statement that covers a great deal of space and is so full of items that it is not readily understandable.

It is, of course, of the utmost importance that a statement presented by what is known as a public company, where the shares are held extensively by the public, should disclose the facts in a way that they can be understood. In such cases there are frequently large bodies of bondholders and shareholders to be considered. It is often found that public companies have mortgage bonds or debentures outstanding, also preferred shares in many cases (in some cases both first and second preferred shares) and common shares. All these classes of ownership are different; they have different rights and it is important that each class should be able to interpret the balance sheet in such a way as to be in a position to value the assets in relation to its own particular investment.

**Bondholders.** For instance, it is important for bondholders to know whether the company has earned sufficient to take care of the bond interest and sinking fund, if any; it is important for the bondholders to know that the properties are being properly maintained and satisfactorily depreciated; it is moreover important for them to know that the liquid position of the company is being maintained and that, therefore, there is reasonable expectation that payments of bond interest and sinking fund are not only being earned but can also be paid. You will really see that in order to give this information the balance sheet and profit and loss account must disclose the correct earnings; they must show the amounts appropriated for depreciation and for other necessary reserves, and whether such appropriations are charged against earnings, and must clearly show the liquid assets and current liabilities so that the working capital position can be readily ascertained. Large bondholders, such as life insurance companies and other financial institutions, have more opportunity of finding out from time to time the position of companies whose bonds they hold, and they follow the operations of these companies closely; small bondholders, on the other hand, have not this same opportunity but are still entitled to have the picture presented to them in a way that they can understand.

**Preferred Shareholders.** It is important for the preferred shareholders to know whether, after provision has been made for bond interest and sinking fund, if any, there are any earnings left for dividends on preferred shares; it is important for them to know that there is working capital with which to pay the dividends without borrowing, and it is particularly important, when preferred dividends are in arrears, for them to be able to follow the true condition, particularly

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as in many cases preferred shareholders have voting and other management rights when their dividends are in arrears.

**Common Shareholders.** It is important for common shareholders to know all the things that bondholders and preferred shareholders should know and in addition what the chances are for some return upon their own investment.

All these points are of major importance to investors, and the management of a company and its auditors cannot be too careful in presenting the facts in such a way that so far as possible, at any rate the principal questions can be answered. From the point of view of the company's obligations to bankers and creditors it is equally important that the facts be presented in a true light.

**Bankers.** Bankers want to know what the assets specifically assigned to them or given to them as security are worth and are likely to produce; they want to know what the working capital position is and the expectation of their loans being repaid; they want to know what financing will be necessary in order to carry the company through the next period of its activities.

**Other Creditors.** So far as other creditors are concerned, it is important for them to know where they stand, what security, if any, has been given to bondholders, bankers, or others, and whether the company is operating so as to justify them in continuing their credit.

It is surprising to what extent balance sheets are analyzed by bankers or other creditors extending credit. There is usually in every large company an up-to-date credit department with a credit man in charge and his duty amongst other things is to study the balance sheets of companies to which his company is extending credit, to see from time to time what progress is being made and whether there is any risk in continuing the credit so given.

**Taxation Authorities.** It is important, of course, that financial statements should be prepared in such a way that proper disclosure is made of the salient facts affecting the different taxation authorities. Accountants and auditors must observe the different statutes and regulations in this regard and must not be parties to the preparation of a statement which would mislead and prevent such authorities from finding out what the real profits of a business are.

You might well ask how anyone is going to prepare a statement which will give all this information. It will be perhaps difficult to cover every point, but it is apparent that a very careful study must be made of the form in which the statement is to be presented. As I have already pointed out, too much detail is merely confusing, essential features only need be dealt with but those must be treated in a way that can be easily understood.

There are no laid-down standards for the order in which assets and liabilities should be given. As already stated there are certain requirements under the Companies Acts but these do not insist on any special order being adhered to. Many companies commence by showing their fixed assets, consisting of land, buildings and plant, and on the liability side of the balance sheet show as the first items the bonded indebtedness, if any, the capital and surplus. A much more preferable way in dealing with assets and liabilities, in my view, is to show first amongst the assets those which are most easily realizable, commencing with cash, receivables, inventories and other sundry current assets, with a sub-total indicating what the total of the current assets is, and then following on with the fixed and intangible items, and on the liability side of the balance sheet commence with bank loans, if any, and amounts owing to creditors, the total of

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which can be given and compared with the total of the current assets, to be followed by fixed liabilities, such as bonded indebtedness, capital and surplus.

Provided the assets and liabilities fall clearly within the groups I have just mentioned there is little or no difficulty. It is nevertheless important where by the inclusion of certain items of a special nature in any of these groups a material fact is not disclosed or the statement would be misleading, that such items be shown separately. An outstanding instance of this would be that of a company selling foreign business to a purchaser in a foreign country, payment to be received over a period of years. Such an item could hardly be classed as "Accounts Receivable," which usually indicates amounts owing by debtors on current account. Amounts owing by the directors of a business is another item which should be shown separately. Goods on consignment should be included not in accounts receivable but in inventories. Many such items will readily occur to one familiar with the preparation of a balance sheet but I merely want to emphasize the principle that one is only justified in shortening the statement to a few items on each side if the assets and liabilities clearly fall within the groups selected to make up the items.

The next consideration would be to select the proper wording for the different items. Time will not permit me to deal with all the different ways I have experienced of describing assets and liabilities. Let me, however, give you some important examples. Some balance sheets merely show "Inventories" and leave the description at that. This means nothing; no information is given and much might be concealed. Are inventories appearing "at cost," "at market value," or at some other value placed on them by the management, Are there any reserves behind them? Do they consist of raw materials, goods in process or finished goods, or of all three kinds? The information can be conveyed in simple language and in such manner as to occasion no misunderstanding. Take again "Fixed Assets"; what is their value? have they been appraised? have they been depreciated, and if so is the depreciation deducted? Or again, take "Receivables"; are they written down or is any reserve deducted? You can easily see how important these questions are and how simply they can be dealt with if it is desirous to give the true facts.

### Balance Sheets of Private Companies

I would not want to leave the impression that the construction of the financial statement of a private company is not of the greatest importance, but it is possibly not of the same importance as that of a public company. The shares of a private company are closely held and it is easier to make contacts with the owners of the business and discuss their statements with them and explain what is not apparent on the face of them. There has been growing up in the accounting profession for some time the practice of presenting financial statements of private companies with reports attached to them giving fuller details than can be conveniently given on the balance sheet itself. This to my thinking is an excellent way of presenting a financial statement because the extent of the audit can be described, the important features of the business can be discussed and a description of all the assets and liabilities can be given. In such a case it is usual on the balance sheet to append a certificate merely stating that the balance sheet is correct, subject to an attached report and to deal in the report with all the details.

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### Balance Sheets for Special Purposes

Accountants are being called in more and more in the last few years to prepare balance sheets and reports thereon for bankers, large creditors, or for certain groups of shareholders or other interests. The most common of all is the preparation of a balance sheet for a bank. In this case it is usual to deal in a somewhat different way with the assets and liabilities and to give considerably more detail as to their likely value. I have found in practice that bankers are very little concerned about the fixed assets of a business; what they chiefly want to know is the real value of the liquid assets, such as cash, receivables and inventories, the amounts to be paid to creditors, when the payments have to be met and the company's expectation as to when it will be able to retire its loan, together with an estimate of the company's probable progress in the course of the following six or twelve months—this latter for the purpose of determining whether the liquid position is likely to be improved and the loan reduced.

In preparing balance sheets for bankers, it is usual for the accountants to describe in considerable detail the liquid assets and their probable realization value, particularly giving the condition and collectibility of the accounts receivable and the condition and probable value in trade of the company's inventories. The bankers frequently also require other information of a special kind, such as a review of the profits over a period of years, a comparative statement of the expenses of the company for some years past so as to be in a position to judge whether extravagance has crept in, and other like information which will allow them to judge of the efficiency of the company's management.

### Fixed Assets

It is usually a matter beyond the scope of a company's auditor to attempt to place a value upon the fixed assets of a company. His duty, however, in the presentation of the balance sheet is to see that they are properly described and to indicate in what manner valuations are arrived at whether at cost or at appraised value or at depreciated value, or how. In recent years a great many of our larger companies have had appraisals made of their fixed assets which have substantially increased the book values of the buildings and plant. It is of the utmost importance that where such an appraisal is made this fact be clearly stated on the balance sheet so that the investor may have an opportunity of knowing this fact for himself. The date of the appraisal should be given and whether it has been made by a recognized and reputable appraisal company and whether the assets are shown at depreciated appraisal values or appraisal values. It is also necessary that the statement indicate what use has been made of any surplus (if any) that may have risen as a result of the appraisal.

### Intangible Assets

Assets of an intangible nature, such as goodwill, should be clearly shown on the balance sheet and, if possible, some indication be given as to how the asset has been created, whether through sale to a new company or otherwise. Most sound companies carry goodwill at as nominal a figure as possible, since it is always considered an asset of doubtful value, depending as it does upon the ability of the company to earn profits. Other intangible assets include discount on debentures and other similar items, and in some cases deferred advertising. It is important that such items be separately shown, and sufficient information be given to enable the reader to determine what they consist of and what their likely value is. As a rule, very little value

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should be attached to items of this sort, and it is good practice to write them off as quickly as possible.

### Reserves

These items on a balance sheet are probably the most confusing to the mind of the average reader. There are a great many kinds of reserves such as, reserves against depreciation of fixed assets, reserves against probable or possible losses in the collection of accounts receivable, reserves against inventory values or possible falling off in prices, reserves created out of the writing-up of fixed assets, special reserves of different kinds, and in some cases reserves for equalization of profits or dividends.

In my view the best practice is to show all reserve items separately, except that I think it is permissible to deduct receivable reserves and inventory reserves from their respective assets so long as in the presentation of the balance sheet these assets are stated as being after deduction of reserves. A company carrying hidden reserves to any substantial amount is not presenting a balance sheet that discloses all the facts and which can, therefore, be readily analyzed.

### Capital

It is important that the manner in which the capital of a company is made up should be clearly stated. In the first place, the authorized capital should be given and then the issued capital should be divided as between preferred shares, giving the par value thereof and the number of shares issued, or if preferred shares have no par value, then giving the stated value thereof, number of common shares issued and the stated value of these. Although it is rare, I have seen cases where balance sheets do not show the number of shares outstanding and I think it is most important that this be given so as to enable a shareholder to see from time to time what percentage of the outstanding capital he himself holds.

### Surplus

In my view a surplus account should accompany the presentation of every balance sheet and it should show the manner in which the surplus account has been built up by indicating the surplus at the commencement of the year, the profits or losses made during the year, the items deducted from surplus, such as dividends, and the balance at the end of the year. This is the usual way of showing surplus account and gives the investor information as to the profits for the year.

### Interpretation of Financial Statements

If I were asked by a client to analyze the financial statement of a large industrial or financial concern I would first of all request the balance sheets of the concern for at least five years back and the profit and loss accounts for the same period. I would set these up in comparative form and as a result would be able to form some reasonable judgment as to what has happened to the assets over this five-year period, what the trend of profits had been during the same period and, in a very general way, come to some conclusion as to the soundness of the business. It would, of course, be impossible by merely looking at the published balance sheets and profit and loss accounts to do more than touch the high spots, but provided the statements were prepared in similar form each year and were fairly presented, it should form sufficient guide for ordinary purposes.

One very practical way of valuing the assets of a company is to look first at the earning power. In the long run no assets have any

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real value if the company is unable to earn through those assets sufficient to repay the investors a reasonable return on their investment. A company may be excellently well equipped in buildings and plant—I know some companies who are far too well equipped at the present time—but if this equipment cannot produce goods which can be sold at a profit, it in itself has very little real value.

If you show goodwill on a balance sheet at a substantial figure and the company has had a bad experience of losses over a period of years, you can take it for granted that goodwill has little or no value unless the company is transacting a specialty business and, even in such cases, the value of goodwill is very doubtful where there are no profits. If you find that the amount of depreciation which is being put up annually against the fixed assets of the company is not adequate, you can usually take for granted that the earnings of the company are not sufficient to allow of adequate depreciation and can regard this as a danger signal. If you find that large items of expenditure, such as advertising, are being carried forward from one year into another, it is usually a sign that the earnings of a company are slim, or if you find that other intangible assets are not being written down from year to year, the same conclusion might reasonably be drawn.

In my view it is almost impossible to value a business or to come to a proper conclusion as to whether to invest in it or not unless it is possible to obtain the true earning power of the company over a period of years. This, in my opinion, is the most essential point to be considered. Of course, in the early days of a company some losses may be expected and one must not allow one's vision to be clouded by this feature, but if after a reasonable period of time the company does not show satisfactory profits, my view is that as an investment it had better be left alone.

One of the most outstanding questions to be considered in determining whether to invest in a company or not is the strength of the management. This, of course, can only be determined by knowledge or experience, but it is without question true that if a company has good management it will come through bad times with less grief than if its management were poor, and will be better able to take advantage of the upturn in business with the approach of good times.

Before closing I would like to refer to the work that is being done by many of our leading financial papers in analyzing the financial statements of public companies. Good progress has been made in recent years in this work and the financial editors are to be congratulated upon the manner in which they present the facts.

In conclusion, I would like to say one word about the relation between Costs and Financial Statements. In the first place, it is quite impossible to prepare an accurate presentation of a company's operations unless proper costs are obtainable. Costs are necessary in determining inventory values and profits. In my experience a proper cost system is essential to the assurance of an accurate statement of operations and, speaking as a member of the Canadian Society of Cost Accountants, I want to emphasize this view and at the same time express my very great appreciation of the work that has been done by cost accountants, particularly in the last few years, in bringing about more adequate and accurate records for the purpose of determining to a more exact degree the real results of operations.

## COST AND MANAGEMENT

# Some Aspects of Sound Industrial Development

By J. M. DAVIDSON,

*Managing Secretary, Industrial Development Board of Manitoba  
(Before Winnipeg Chapter, March 15, 1932)*

**L**ET me say, at the outset, that the day of promiscuous broadcasting of generalities in the attraction of industries, is past. The brass band tactics of other days, when cities would go out and spend from \$50,000 to \$100,000 in a year in an endeavor to attract industries, without first finding out what they had to offer, or the kind of industries that would prosper in their communities, has given way to a procedure in which the problem is handled in a sound way, through proper application of economic principles. Cities have realized that today, more than ever before, in the re-location of plants or in the establishments of new ones, most successful corporations are basing their decisions wholly on sound economics. "If I could broadcast my message to reach all plant executives," said Tyler S. Rogers, prominent industrial consultant of New York, in a recent address on plant location, "would advise them to challenge every opinion expessed with regard to any aspect of a new plant location problem and to question every statement, until figures and facts that cannot be disputed, are received."

Unfortunately, however, the giving of bonuses is again common. A study of 261 communities made recently in the United States showed that 131 of them were opposed to all special inducements and the remainder, 130, were in favor of them. The majority of the latter were smaller and newer communities, who favored free site, fixed assessment, and, in some cases, financial aid to defray cost of moving the factory.

### Main Factors In Location.

The main factors governing the location of an industry are: Markets,

**Raw Materials**—Natural resources affect only certain industries. They become a factor when an extremely large supply of water is required or where natural gas, minerals, fuels, and other raw materials of like nature must be available in close proximity to the plant.

**Labor**—Taken in a general way, sometimes labor has a greater bearing on plant location than any of the other factors, as for instance, when a definite type of labor is needed. General wage scales, of course, are of paramount importance to almost every industry, and it only takes a brief study to find that various sections of the country show marked variations in average wage scales.

The cost of labor Per Unit of Production is the common denominator that must be used for accurate analysis or comparisons. This unit labor cost is controlled by two factors, namely, the Man-Hour-Wage and Over All Efficiency of the worker.

The Man-Hour-Wage is governed by prevailing labor rates, supply and demand and cost of living.

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The Efficiency of the Worker is dependent upon his mental and physical characteristics, climatic and general living conditions, labor turnover and, in many cases, by the question of open or closed shop. It is also affected by plant layout, type of equipment and general working conditions.

**Transportation**—The cost of transportation of raw materials and the cost of distributing finished products must be balanced, one against the other, to find a locality which reduces the sum of these costs to the lowest possible point.

### Taxation.

**Power**—Certain industries require water power or electricity in quantities that are available only at certain places or that are only cheap enough to justify their use in certain locations.

**Climate**—Climate is either a very important factor or is no factor at all. It becomes important for certain special industries in which humidity or rainfall or extremes of temperature may facilitate the manufacturing process or may have a strong bearing upon the natural resources which constitute the raw materials involved.

The most important factor, however, is "Markets."

With production technique developed to a high degree of efficiency, the greatest opportunity for advantage in present-day competition lies in similarly eliminating wastes from distribution. The rising costs of distribution in recent years have accentuated this possibility and have stimulated market research with a view to placing distribution procedure on a more intelligent basis.

Plant locations are being chosen with increasing regard for this "more intelligent basis" of distribution. Leading authorities are agreed that efforts to improve production technique are approaching the point of diminishing return. Increased manufacturing profits henceforth are more likely to come from improved distribution than from improved manufacturing methods. Advantageous location is the beginning of improved distribution.

### Great Importance Of Market.

The tendency today is undoubtedly toward the movement of industry closer to its markets. Not long ago, an exhaustive survey of manufacturers in the United States was made to find out the main factors which influence location. A summary of these findings is very interesting. It showed clearly that, not power, nor natural resources, nor transportation, but markets, was the most important factor. Nearness to market, at a point where transportation costs would be reduced to a minimum.

Here is what that record showed:—

#### U. S. Survey of manufacturers—

40% voted markets first.

75% first, second or third.

35% labor first,

12% raw materials first.

Votes weighted—6 points for a vote for first place, 5 for second and so on and the results added. This analysis may be looked at in two ways—

1st.—Figured markets 100%:

Markets — 100.

Labor — 96.

Transportation — 88.

Raw materials — 79.

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Power	— 56.
Climate	— 27.
2nd.—Entire vote—100%:	
Markets	— 22.4
Labor	— 21.4.
Transportation	— 19.8
Raw materials	— 17.6
Power	— 12.6
Climate	— 6.2

The potential market for a given product is determined by the normal consumption of that territory economically reached in competition with other production centres.

The normal consumption may be dependent upon the purchasing power of the population served, a demand dictated by local conditions or by the needs of the industries peculiar to the region.

The actual market is the potential market less that portion which would normally be lost to competitors.

The economic minimum for a given industry is the smallest volume of business which will admit of favorable costs per unit of production. This varies for each industry.

The actual market, conservatively estimated, must always be able to absorb at least the economic minimum of production before a manufacturer is justified in establishing a factory to serve that market.

But remember please that while markets, generally speaking, is the main location factor in the average industry, nevertheless there are scores of industries in which the location is governed almost entirely by other factors. Many industries must be close to raw materials. Clearly, there is no economy in shipping bulky raw materials great distances if the larger part of it becomes waste in the process of manufacturing. For this reason industries such as paper-making, that depend upon forest products, are likely to be found near the forests. Packing houses are placed near stock-raising centres, and pottery industries near clay beds. In the case of copper products, the ore is reduced near the mine, since its transportation for any great distance is, in general, prohibitive.

When the International Nickel Company was considering a location for its plant, and it finally located in Huntington, it weighed the factors which enter into a location as follows:—

Labor	250
Fuel	330
Power	100
Living conditions	100
Transportation	50
Water	10
Climate	50
Supplies	60
Taxes and laws,	20
Site	10
Construction costs	20
<hr/>	
Total	1,000

You will note that there is nothing in that list on markets. The reason for this is that this particular industry is the only one of its

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kind. Its market is the world. At the time of its location, fuel was an important or major factor, and carried a great deal of weight in the selection of the location. Since then, as a result of improvement in technical processes, this company is finding that fuel is no longer as important as formerly.

### Power Costs

In a city where hydro-electric is cheap, there might be a tendency to question the relative importance of the factors referred to in the U. S. survey. You will note in that analysis that Power is fifth in importance. The fact is that, with few exceptions, cheap power is not of as great importance to an industry as many think. Although, when other factors are about equal, favorable power rates are an inducement, they are seldom a determining factor in the location of an industry. This fact was brought out clearly at the World Power Conference in Berlin in 1930. The Electrical World, reporting on that conference, quotes some interesting statistics on the proportion of the total production costs, in certain industries, which is represented by fuel and power costs:—

### Fuel and Power Costs in Total Production Expense—United States

Auto and Aircraft .....	8.60
Brushes .....	0.89
Cement .....	20.50
Electric products .....	1.17
Furniture and Mattresses .....	1.19
Glass and Glassware .....	10.80
Railway Repair Shops .....	2.35
Rubber tires .....	1.27
Slaughtering .....	0.76
Soap .....	1.45
Washing Machines .....	0.74
Wooden boxes .....	0.92
Woollens, Worsted goods .....	2.12

Finding the right location for an industry today, it will be seen is a problem for the application of good sound common sense. It means a detailed analysis of delivered to customer cost per unit of sale. The problem is usually approached by manufacturers in three stages:—

- 1.—Choosing the general territory;
- 2.—Choosing the particular community;
- 3.—Choosing the site.

Stated concisely, the task is to determine that location which, in consideration of all factors affecting delivered-to-customer cost of the product to be manufactured that will afford the enterprise the greatest advantage to be obtained by virtue of location. This means an analysis not only of all manufacturing costs, but of costs of transporting raw material to the plant and transportation of the finished product to the consumer. Here, for instance, is an interesting problem of plant location considered recently by a cement mill:

## COST AND MANAGEMENT

### COMPUTATIONS OF DELIVERED-TO-CUSTOMER COST, (x) LOCATION OF CEMENT MILL

		Site A	Site B	Site C	Site D
Raw materials	(Limestone ....	\$ 0.14	\$ 0.16	\$ 0.13	\$ 0.10
at the mill.....	(Shale .....	0.02	0.03	0.02	0.03
	(Gypsum .....	0.04	0.04	0.04	0.04
		<hr/>	<hr/>	<hr/>	<hr/>
Fuel and power....	(Coal .....	(0.20)*	(0.23)*	(0.19)*	(0.17)*
	(Electrical energy .....	0.27	0.19	0.30	0.22
		<hr/>	<hr/>	<hr/>	<hr/>
Works expense ....	(Mill labor ....	0.18	0.22	0.26	0.20
	(Superintendence, laboratory, re- (pair parts, etc..	0.14	0.16	0.12	0.14
		<hr/>	<hr/>	<hr/>	<hr/>
General expense	(Administration	(0.65)	(0.64)	(0.75)	(0.59)
and charges .....	(& incidental ..	0.06	0.05	0.05	0.05
	(Insurance ...	0.01	0.01	0.01	0.01
	(Taxes (includ- ing income) ..	0.06	0.08	0.10	0.08
	(Bond Interest .	0.05	0.05	0.05	0.05
	(Amortization .	0.06	0.06	0.06	0.06
		<hr/>	<hr/>	<hr/>	<hr/>
Distribution .....	(Packing, sack (cleaning and (sack loss .....	(0.87)	(0.88)	(0.96)	(0.81)
	(Sales .....	0.07	0.07	0.07	0.07
	(Transportation) (to market .....	0.10	0.09	0.10	0.11
		<hr/>	<hr/>	<hr/>	<hr/>
		0.33	0.24	0.30	0.40
		<hr/>	<hr/>	<hr/>	<hr/>
	TOTAL ..	\$ 1.61	\$ 1.53	\$ 1.70	\$ 1.64

(x) To a large extent these figures are taken from an actual case. Some changes have been made both to increase the effectiveness for purposes of illustration and to conceal the identity of the company.

(\*) Figures in parenthesis are cumulative totals.

#### Note—

Site A was 5 miles from a property where both limestone and shale could be secured by a royalty arrangement. The limestone was overlain with a suitable shale, the shale, in turn, having an earth overburden of from 6 to 8 feet. Both the limestone and the clay could be transported to the mill by a private railway which would have to be built. Site B was 7 miles from good deposits of stone and shale, but both were heavily overburdened and would have to be taken out by separate operations. Trucking was adjudged the most economical means of transportation under the conditions. In this case, also, the raw materials could be taken out on royalty without purchasing property. At C limestone was adjacent to the site, in a hillside quarry, but was very hard. Shale, also, could be taken out at the site. Good limestone deposits were included in the property at site D, and clay could be obtained by a truck haul of a mile and a half.

## SOME ASPECTS OF SOUND INDUSTRIAL DEVELOPMENT

Location A had a better rate on coal than C, but not as favorable a rate as B and D. Electric power was cheapest at A. C had practically the same power rate as D, but, on account of the hardness of the lime rock available at this point, the engineers estimated that from 15 to 20 per cent more energy would be used. Labor was cheapest at C, highest at B, and about average of these at A and D. On account of the hardness of the rock at C, it was estimated that an extra \$10,000 a year would be required for repair parts.

Since site A was some distance from a sizeable city or town, allowance was made for the maintenance office in the city where it was expected most of the cement would be sold. But at site A, practically total exemption from taxation was held out as an inducement by the community to secure the mill. Location C was in an adjoining State which had a state income tax. Sales cost was estimated lower at B than at A or C because of its relative proximity to the market, and higher at D because of its greater distance. Transportation charges were computed from prevailing freight rates on cement. The 40-cent rate from site D was disproportionate to the mileage because of an adverse break of rates near the state line which had to be crossed.

From these various unit costs, total delivered-to-customer cost was built up. The results showed that site B, at which raw materials and labor cost most, was the best location. The second best location was A, whose raw materials, coal and transportation were next to the highest among the four. Site C, the poorest of the four, had cheapest labor, next to lowest raw materials cost, and next to cheapest transportation.

In this particular case, the most advantageous site ranked fourth among the four in raw materials cost, fourth in labor cost, third in power cost, second in taxation, first in coal cost, and transportation to the market, and equal to first in works expense exclusive of direct labor. The least advantageous location of the four ranked first in cheapness of labor, second in the cost of raw materials and transportation to market, and fourth in coal, power and taxes. In the last analysis, the third best location with respect to the total of all items except distribution costs was the most advantageous. The one which ranked best in the total of all items except distribution was third when everything had been included. These apparent inconsistencies make plain the danger of formulating decisions before all the factors have been considered, each in its proper relationship to the others.

### Sugar Beet Industry.

The sugar beet industry is one in which the basic essentials must be very carefully studied before the location of a refinery. We have had some experience in the intricate details involved in the successful establishment of that industry and I have here a copy of the report on the Manitoba field for the sugar beet industry which was prepared by the Industrial Development Board of Manitoba for presentation to the American Beet Sugar Co. of Denver, Colo. This report, which was largely instrumental in bringing that company into the Manitoba field, deals with more than twenty factors involved in the successful establishment of the beet industry. The most important point to be proven was that we had in Manitoba climatic and soil conditions suited to the needs of the beet industry. More than two-thirds of the brief is, therefore, made up of detailed analyses of soil conditions in the province by crop districts and data from each of our Meteorological stations. These figures are given by months and date back some forty years. Dates of early and late frosts, precipitation and sunshine, are also dealt with in a similar manner.

## COST AND MANAGEMENT

We have been carrying out tests of sugar beets during the past four years and the results of these tests, covering more than 100 plots in various parts of the province, are also given.

The character and extent of labor supply is a matter of supreme importance in the sugar beet industry, for not every class of labor can be adapted to the intensive cultivation which sugar beets require. The report, therefore, shows the population of the various crop districts in Manitoba by number and nationalities and is accompanied by maps showing the number and population of the various Hutterite and other colonies in prospective beet growing areas. Such information was a powerful argument from a labor standpoint. We were able to show that within a radius of 100 miles or so of Winnipeg, there resided more than 3,000 former beet growers.

Trucking, rail transportation and freight differentials between Eastern and Western Canada are, of course, other important points to consider and these are dealt with in the report.

A sugar beet refinery uses large quantities of raw materials, many of which are found in the province or in Western Canada, and the cost of bringing these to the factory was also analysed. Limestone is one of these raw materials and a plant would use 70 tons of it per day. Our studies show that the company was securing its supply of limestone from Moosehorn, Manitoba, and shipping it to East Grand Forks. The presence of this abundant supply of raw material so close to Winnipeg, was a factor in our favor and a very important factor.

Then, too, a refinery has valuable by-products such as molasses and beet pulp. We are fortunate in having in Greater Winnipeg an alcohol refinery to which a beet plant could sell its entire output of molasses. Manitoba is a rapidly growing dairying province and the market for beet pulp, which is an excellent cattle food, was readily apparent.

To a company unfamiliar with the Canadian field, such matters as rates of duty, extent and nature of the Canadian market, location and volume of competing plants, etc., had also to be covered. The combination of all of the factors outlined in this report presented a most attractive picture for the establishment of the industry in this province.

With present-day competition in industry so keen, there is little wonder that manufacturers are giving profound study to the matter of plant location. There are plenty of instances of grave errors in industrial locations and plants developed for sentimental reasons in towns where, on sound principles, they should not be.

Colonel J. B. Reynolds, Vice-President in Charge of Industrial Development, Middle West Utilities Company, Chicago, during a recent visit to Winnipeg, said that he knew of a plant in the United States which, if situated 50 miles west of its present location, would be worth a million dollars more, on account of a freight differential. Here is a factor which is subject to change, and yet it is exceedingly important, either from the viewpoint of the community which is favored by the differential, or the community which is handicapped by the differential. It is in gathering information that will assist manufacturers in comparing the advantages of one location with another, that industrial organizations such as the Industrial Development Board of Manitoba can render practical service. The work of such a body often includes the preparation of data not only in regard to its home territory, but of other industrial centres as well. For arguments must be based on facts and the facts can only be arrived at by careful comparison of costs in locations under review.

## SOME ASPECTS OF SOUND INDUSTRIAL DEVELOPMENT

### Good Management Needed

So much for some of the factors which govern the sound location of industry. Now, as to the factors governing the successful operation of industry. I shall not attempt to do more than touch briefly on some phases of the subject. It is a vast problem and is growing vaster as the ramifications of modern industry are expanded.

The sound development of industry not only means the establishment of new industries suited to the field, but means also the careful fostering of existing industries. The Industrial Development Board of Manitoba is particularly concerned with this latter phase of industrial development. We are concerned with the district in which an industry is located; the nature and condition of the building in which it is housed; the layout and character of its equipment; the source of its raw materials; their quality and the cost of laying them down at the plant, and other sources from which the same materials can be drawn; the quality of the product turned out and the way it is finished or packed for sale. In some cases we are interested in the financial set-up of a concern, as lack of sufficient working capital is one of the greatest problems we find among smaller industries. But most of all, we are concerned with the kind of leadership that the industry is receiving,—the men behind the industry. This is invariably the greatest factor in its welfare. You know that there is an old saying that "Wise leadership is more essential to successful operation than extensive organization or perfect equipment." This law has long been recognized in military affairs, having been succinctly stated by one of Napoleon's historians as "a wise direction is of more avail than overwhelming numbers, sound strategy than the most perfect armament." Henry L. Gantt paraphrased this for industry as "a wise policy is of more avail than a large plant, good management than perfect equipment." "My observation," said A. L. Scott, President of Lockwood, Greene & Co., Industrial Engineers of New York, in a recent address, "is that industries are built around men and that is the first and most important thing in the success of a plant."

Scores of industries in this country and, in fact, right in our own province, are suffering today from poor leadership. Many of them are headed by sincere, hard-working men, who may be particularly able in the manufacturing end of the business, but who have inadequate knowledge of the selling end. Others are capable manufacturers and good salesmen, but simply have not the business sagacity to grapple satisfactorily with their financial problems.

It is surprising what a large percentage of the industries of the country today are comparatively small concerns. For instance, in such a typical American manufacturing city as Pittsburgh, Pa., 1,400 out of a total of 2,170 plants employ less than 10 persons. The average number of employees for all the 190,000 industrial establishments in the United States, according to census reports, is 44. And this takes no account of 5,000,000 partnerships and one-man firms and shops. Only one half of one per cent of the manufacturing establishments of the country employ more than 1,000 wage-earners; only 1.4 per cent employ more than 500 and only 3.4 per cent more than 250. 87.2% of the industrial plants in the United States employ less than 100 workers.

In our own province, almost one-half of our plants (992) employ less than 5 hands.<sup>217</sup> of them employ 10 persons and only 39 employ more than 100. In the latter group, 23 employ an average of 146 people, 12 employ 384, and 4 employ 1,316.

## COST AND MANAGEMENT

This is a natural situation in a newly developed industrial community and in an agricultural area where the market is sparse and widely scattered. But the point I wish to stress is that no matter what size the industry is, if it is the right kind of an industry, it is worth encouraging. The small concerns of today may be the big ones of to-morrow. Many a struggling "infant," when properly nourished, has become a giant in its field.

More than 82% of the industrial growth in American cities is from the expansion of existing industries and the creation of new industries within the community, i.e. organized and financed by local capital. This is generally recognized as the soundest method of industrial development and it is the policy that the Industrial Development Board of Manitoba has followed since its inception.

While there are limits to the direct aid that the Board can render to established industries, nevertheless it can point the way to new methods and improvements made by similar industries elsewhere, and can do much to encourage the addition of new lines by keeping manufacturers posted on the development of new products in their respective fields.

### New Products and Processes

We are living in an age of new ideas that manufacturers should keep in touch with. New products and new uses mean profits, new equipment, new methods of efficiency for the human element. There is a maze of new developments in the industrial world today. They pass in panorama before our eyes and we marvel at the extent of human ingenuity.

Nitroglycerine is the basis of a new lubricant to grease boots and squeaky wheels; a new attachment to a washing machine makes ice cream; the American Chemical Society has produced "large and beautiful" diamonds from sugar and iron filings; a doorbell has been invented with a penny-in-the-slot attachment; Germany has produced paper clothing which is waterproof, washable and holds its shape, and the same country gets electric power from mud pies; mud on the bottom of a small Rhine tributary contains a combustible material, which is dried in small cakes and burned to run machinery which generates electric current; a non-returnable milk bottle of wood fibre has been invented; perfume is being used to remove unpleasant odors from rubber goods and shoe polish; Fleishmann's are building fortunes on new uses for yeast.

At the close of the war, it required from 28 to 30 days to apply the numerous coatings of paint, varnish and enamel to the bodies of motor cars. A quicker drying finish was positively demanded. It was finally developed with a hitherto comparatively valueless product, butyl alcohol, derived from the fermentation of corn. The finishing of an automobile body is now a matter of minutes where before it required days.

Gilbreth and other master minds have shown us new ways to cut waste motion and increase the efficiency of the worker and have established two well accepted laws of factory efficiency—

1. Law of Division of Work or Specialization of the Job—  
"Subdividing work so that one or a very few manual or mental operations can be assigned to a worker improves the quality and increases the quantity of output."
2. Law of Division of Effort or Specialization of the Individual—  
"Assigning to each worker one or a very few manual or mental operations which he is particularly adapted to perform improves the quality and increases the quantity of output."

## SOME ASPECTS OF SOUND INDUSTRIAL DEVELOPMENT

Specialization of product, the newest phase of American manufacturing practice, offers unlimited opportunities for study, not only on the specialization of one kind of product, that may be made in a variety of sizes and kinds, but on a few varieties of a single product. Revolutionary changes in this field of study are being made everywhere. An example of specializing on a few varieties of a principal line is the experience of the Norwich Pharmacal Company, of Norwich, N.Y. This concern reduced its line of drugs and pharmaceuticals from four thousand items to four hundred. At the same time the investment and inventory was cut \$1,000,000 and some \$200,000 was saved on the annual payroll.

We have furniture factories that make only one line, as bedroom, living room or dining room pieces; many textile mills specialize on a single kind of fabric; paper mills regularly produce only one kind of product, as news-print or book papers, and so on. Furthermore we have as an outstanding example of concentrating on one variety of product, the Ford record of 15,000,000 Model T cars.

We could discuss at great length the changes that are taking place in factory construction and layout to meet the changing conditions of the times; the scores of instances where the trend of an industry has been definitely turned from inevitable failure to success by the abandonment of old plans and old equipment for new and modern ones. Possibly the most influential technical change made in the industries of the country since the war has been in connection with the control of the flow of work. Conveyors or other material handling devices installed to move the work from place to place or to set the pace of production have been applied in all branches of manufacturing. As one result the speed of production is wholly or partially determined by the speed of the mechanical device. This has tended to ease the burden and care of supervision, has made scheduling and dispatching automatic, has extended the process of specialization of both work and worker, and made the time of production definitely predictable.

These are some phases of sound industrial development. I contend that Manitoba's industrial growth will depend, in a large measure, upon the extent to which sound principles along the lines I have mentioned are applied in the establishment and the operation of our factories. Industry in this province can be fostered along sound lines by encouraging the establishment of industries suited to the needs of the West and it can be properly diversified by the location here of well selected related or accessory industries.

### Work of Manitoba Board

In this work the Industrial Development Board of Manitoba is endeavoring to keep the province's growth on an even keel and to guide it on a charted course. We have maintained close contact with established industries and have been helpful to many of them in solving problems of production, marketing, financing, etc.

It is perhaps not generally known that the Board employs a competent adviser to establish industries—a man well qualified to discuss problems of costs, selling, finances, etc. He is in regular contact with the manufacturers, particularly the smaller ones, whose problem is so frequently one of costs. This service is given by the Board without any charge to the manufacturer, in the hope that it will be a practical contribution to the sound development of industry in the province.

I have here what is called a self-analysis report for manufacturers. It is entitled "How to Increase Profits by Modern Methods

## COST AND MANAGEMENT

of Handling Materials," and is based on a report used extensively by the new England Council in its efforts to develop the industries of the New England States. This report has been furnished to Manitoba manufacturers, with a suggestion that they use it as a basis for the analysis of their operations. Information of this kind, if properly used, is extremely valuable to any manufacturer.

Another practical way in which the Board is assisting the smaller industries is by establishing contact with investors and bringing them in touch with manufacturers who require additional working capital. A number of such contacts have been made with good results.

### Summary

Sound development of industry, then, to sum up, depends upon:

(1) Close study of a combination of economic factors. No location survey is complete unless all phases of the problem are taken into account.

(2) Fostering the development of industries suited to the needs and conformable to the character of the market and discouraging the development of industries which are either not suited to the field, or which, for other reasons, would give little promise for success—constantly keeping in mind that it is just as important to discourage the establishment of unsound industries as it is to develop sound ones:

(3) Seeing that the industry is rightly located, properly housed and equipped with the best facilities its means will permit; that, as far as its financial resources will permit, it follows the most modern methods in its field.

## The Trend of Production Costs

Commodity prices, as measured by the Dominion Bureau of Statistics index number which is based on the year 1926, were unchanged in July, the index number for which was 66.6, or the same as for June. The following is a comparision by main groups:

	July 1931	June 1932	July 1932
Foods, beverages and tobacco	69.0	59.7	60.9
Other consumers' goods	81.1	78.6	78.5
All consumers' goods	76.3	71.0	71.5
Producers' equipment	89.1	88.1	88.1
Building & construction materials	82.4	76.9	75.9
Manufacturers' materials	61.0	56.7	56.5
All producers' materials	64.9	60.4	60.0
All producers' goods	67.3	63.2	62.8
All commodities	71.3	66.6	66.6

The principal declines in July were in the following: Furs, leather and silk thread and yarn. The principal advances in July were in foreign fresh fruits, dried fruits and vegetables.

## AUTOMOBILE ASSEMBLY COSTS AND FINANCING OF SALES

# Automobile Assembly Costs and the Financing of Sales

BY A. C. McALPINE

(Before Winnipeg Chapter, May 18, 1932)

The Ford Motor Company of Canada, Limited accounting procedure is, I believe, operated with a minimum of retail, consistent of course with the necessary degree of protection. I am referring chiefly to our branch organization of which our Winnipeg branch is a complete unit, and in my remarks, I will endeavour to outline not our company procedures as a whole, but rather branch operation and its connection with our head office.

Our local branch consists of two distinct organizations or you might say, two branches under one management—an assembly branch for the purpose of manufacture and assembling of our product; and a sales branch for distribution. Following this thought, our entire branch accounting activities are divided into two distinct sections—assembly and sales. Salaries of various members of our staff are split on a percentage basis, and certain maintenance expenses, such as Janitor service, are segregated in the same manner, with the result that at the month end our entire expense accounts and disbursements, which we transfer to our head office, are split by all branches on a standard basis. The reason for this division is due to certain of our branches being strictly Sales Branches.

You may possibly be interested in the question which is frequently asked. "Why do you have assembly branches? Why, with your large organization at your head office in the East do you not take care of your entire manufacture and assembly at that point?"

There are a number of reasons for maintaining assembly branches, and I will not burden you with them all, but will give you what, in my opinion, are the two chief reasons:—

- A. Speed of distribution.  
Ordinarily automobiles are built to definite orders and specifications on the strength of signed orders, and you will, therefore, realize the time saved for example on a rush order from Regina being built at Winnipeg rather than at our Head Office.
- B. It is the desire of the Ford Motor Company of Canada, Limited, to handle its disbursements, and distribution of payrolls as equably as possible throughout the Dominion of Canada, and by the maintenance of assembly branches it is able to accomplish this to a certain extent.

### Tools and Equipment

The first phase of my subject is under the heading—"TOOLS AND EQUIPMENT." The only company asset carried on our books at the branch, with the exception, of course, of a few miscellaneous items such as accounts receivable and which only amount to a few hundred dollars, is our branch capitalized equipment. We do not capitalize small tools or equipment, nor tools and castings special to our company—these being charged off as received. All incoming freight is charged off as over-head expense and all expenses are absorbed each month.

## COST AND MANAGEMENT

You will readily see this tends towards conservatism in our financial statement. The fact that we write off special tools and castings immediately does away with the heavy charge that would result in one month or in a limited time in case of a model change, resulting in obsolescence of these tools and castings. As you are all no doubt aware we have just experienced such a condition.

### Inventories

It is possibly our handling of inventories which will be of the greatest interest to you, and I will endeavour to outline this procedure as thoroughly as possible in the minimum of time.

The entire inventories of our Canadian Company, consisting of our head office and factory, and eight branches, are carried on our head office books. They are all carried at prime cost—material and labour—and do not include any freight or handling charges.

Our materials, or inventories, are divided into two sections—productive and service—the productive material representing the parts going into the building or producing of cars and trucks, and the service material being those parts which are sold separately for repairs. All production and service material—whether at Head Office or branches—is carried on one set of cards at Head Office, there being no separation of the two types of material. All individual parts are carried on this one set of cards as such, because, as we carry only one control account, all assemblies in process of construction are not recorded as assemblies, but appear on our cards as parts only.

To this one control account we charge all production and service material as well as productive labour, and the account—to put it as simply as possible—is credited with the prime cost of cars and parts sold (material and labour).

We do not have to transfer material from a raw material account to a work in process account, and subsequently to a finished goods account, which you will readily understand eliminates a great amount of clerical detail.

### Costs

From inventories we move along to our cost records. These are absolutely foreign to our branch organization, all being carried at our Head Office.

A copy of all purchase orders, Head Office and Branch, is given our Cost Division where it is posted to corresponding material cards, and to this material cost is added the duty in case of imported items. When all orders for the period are posted, Comptometer operators calculate the unit price by averaging all purchases for the period. Our cost period is every three months.

Costing of assemblies, that is material cost, is very simple. Assemblies, of course, are simply an assembly of parts; or, a further assembly of minor assemblies, or both, and are costed similar to parts. First, the parts cost is arrived at—the assembly's cost next, and finally the complete car cost, which in the last analysis, is simply an assembly of parts and smaller or minor assemblies. To the cost of assemblies is added the labour of assembling the various parts in addition to the manufacturing labour cost (if any) of each individual part entering into the assembly. By the term "Assembly" we mean a combination of various parts—for example, we have our wheel and tire assembly. The wheels and tires are purchased individually and received by us as separate units. Tires are put on wheels and tires inflated to the proper air-pressure so that when the automobiles reaches that stage in production, when it is ready to be equipped with wheels, the wheel and tire assembly is put on as one unit.

## AUTOMOBILE ASSEMBLY COSTS AND FINANCING OF SALES

### Labour Records

We have two types of labour—productive and non-productive. The former is all of that labour which goes into the manufacture or assembling of an automobile, and the non-productive labour consists of all maintenance work; shipping; repairs; construction etc.

Owing to our labour rates being almost uniform, all time is recorded by hours only and is costed at an average labour rate. A different rate is used for productive labour from that used for non-productive labour, the latter rate being slightly higher than the former. It can be easily seen that a great amount of work is saved by our not recording dollars and cents as well as hours when arriving at labour costs.

Now naturally it is impossible to have each man in every department on productive work for full hours every day, so non-productive hours covering work performed in productive departments are reported separately daily. By deducting the total of this non-productive time from the total payroll hours of the department we arrive at the productive hours of the department. This method eliminates the necessity of reporting all time of the department and results in a considerable saving. Possibly that is not quite clear and I will endeavour to explain further. Say for example we have eight men in a certain productive department working eight hours a day, on the basis of a 40 hour week. These eight men therefore work 320 hours in a week, and if during the week these eight men put in collectively ten hours of non-productive work, such as cleaning or repairs, the actual productive time for that department would naturally be 310 hours.

The assembling of an automobile is made up of various operations. Our Head Office establish what we term "Standard Hours" for each operation, and production of parts or operations completed for the month, extended at standard hours each, gives us total standard hours for the department, and this figure, when compared to actual hours for the department for the same period, gives us the ratio of actual to standard. The average actual labour rate multiplied by this ratio gives us a labour figure which is used to calculate unit labour cost per price. For example—In a month a department completes 1000 operations in 1100 hours on which standard time is one hour per unit—

Total set standard hours for department —	1000
Actual hours for the department	— 1100
Ratio of actual to standard	— 110%
Average productive labour rate — actual	— 88c per hour.
Revised productive labour rate — for cost purposes	$88 \times 110\% = 96.8c$ per hr.

Standard time for one operation — one hour.

Labour cost for one operation — 96.8c

When Head Office and branch labour costs are both arrived at for the month our Head Office is then able to strike a final per car cost by averaging the production of Head Office and branches.

### Overhead Records

As previously mentioned, all overhead expense is written off in the month in which it has been incurred. At Head Office foremen are given a statement each month showing the charges made to the various expense accounts over which they have control, compared with the previous month. This monthly statement given to foremen shows them overhead percentage based on their productive labour for the current month, and also their percentage for the previous

## COST AND MANAGEMENT

month. As our Head Office factory consists of over 200 departments, similar machines and operations have been to a very large extent grouped together. Overhead expense is pro-rated in productive labour, but as we use an average labour rate, this pro-rating is actually done on a productive hour basis. The fact that similar machines are grouped as much as possible tends to segregate overhead expense to the actual machine, resulting in almost and pro-rating of expense on approximately a machine-hour basis.

All expenditures for non-productive labour and materials are compiled by departments—taxes, insurance, depreciation, heat, light, and power etc., are also allocated to departments:

Allocation of taxes is based on floor space;

Insurance on value of machinery and equipment;

Insurance on buildings on floor space;

Depreciation on value of machinery and equipment;

Depreciation of buildings on floor space;

Heat on floor space;

Power on horse-power rating of the department;

These figures give us a department expense, which, when applied to the productive hour cost of department gives us an overhead percentage for each department.

### Financing of Sales

To begin with we are in the happy position of being decidedly unfamiliar with the word "Credit", our entire sales of automobiles and repair parts being strictly cash. Earlier in my remarks I mentioned our accounts receivable, these consisting only of miscellaneous charges such as advertising, so naturally we are never worried over receivables which do not aggregate more than possibly \$100.00 at any one time. We do not contend that all types of business houses are able to sell on this basis, but as far as it is possible to do so, we believe the practice of cash selling to be sound and logical.

The matter of financing of wholesale and retail purchases should be in the hands of an organization equipped to carry it out. As far as our repair parts sales are concerned, these are straight cash sales to our dealers, consisting of counter orders; C.O.D.'s and sight drafts with bills of lading, and it is only when we reach the sale of automobiles that the outside finance company enters the picture.

At the beginning of every year and more often if deemed advisable, each of our dealers submits to the financing company handling our business a statement of affairs, and if, in the opinion of the financing company, dealer's position warrants it, a credit is established for so many automobiles according to dealer's requirements. We are advised of this credit limit and of course govern our shipments accordingly.

We have two types of shipments—by drive from the factory and by carload, the former being the most common in Manitoba, and the carload shipments being used to all points in Saskatchewan and Alberta, requirements for all three Provinces being taken care of from our assembly here. In the case of drives from our factory our dealer pays the company a certain percentage of invoice price, plus a charge made by the financing company, and also signs a term draft for the balance of invoice price, thereby obtaining possession of his car or cars. The term draft is then handed over by us to the local office of the financing company, who, in turn, re-imburse us for the amount of draft, less, of course, the financing charges which we have collected. These drafts are turned over by us without recourse, so you see we still retain our principle in cash selling.

## AUTOMOBILE ASSEMBLY COSTS AND FINANCING OF SALES

Carload shipments are taken care of in the same manner as drives, except demand draft is drawn for the percentage of invoice to be paid for in cash, and covering the balance the same term draft is made up. Both drafts, with bill of lading attached, are then dispatched through regular bank channels and collecting bank advised to surrender bill of lading upon payment of the cash payment draft and acceptance of term draft.

The financing company, upon receipt of term draft from us forward to dealer's bank for collection in the ordinary manner.

While our dealers have possession of cars they still remain, according to contract or agreement terms, the property of the financing company. Immediately upon retail sale of a car, settlement in full of the term draft must be made. Failure to do so naturally affects dealer's credit with the financing company, and it is most important, therefore, that our dealers' term paper be maintained in first class shape in order that flow of cars from our factory to dealers will not be impeded.

Complete cancellation by the financing company of a dealer's credit seriously handicaps our sales in that particular district, and might possibly necessitate our arranging for other dealer representation. With this in mind, we, therefore, undertake (without obligation) to make periodic checks—usually monthly—of cars in dealers' stocks which are carried under term draft, and in case of discrepancies you will realize it is to our advantage to make every possible effort to rectify irregularities, particularly at the peak of the selling season, when a great deal of the automobile dealer's available cash is tied up in used car stocks. It is necessary to watch this situation closely. For example, if a dealer makes retail delivery of an automobile at a price of say \$600.00, and takes in part payment a second hand car for which he allows \$500.00, he is forced—if he happens to be short of ready cash—to re-sell his second hand car before he can take care of his term draft covering the new unit which he has sold.

All of our dealers, however, are not forced to make use of the financing company being in that fortunate position of being able to do their own financing.

The matter of retail automobile financing next enters into the picture, and this is also handled by the outside financing company, direct with our dealers, but as it is so far apart from my subject and the activities of our company, I have omitted all explanations pertaining to retail financing from my remarks. If, however, there is anyone here who would be interested in this phase of the automobile business I will be glad to explain it as far as I am able to do so.

We will now revert to a further study of our contract with our Head Office as far as sales are concerned. As previously stated, all inventories are carried on Head Office books, and at the branch we are not charged in any way with assemblies, parts, or completed automobiles. At each month-end after sales have been recapped we transfer to our Head Office through the medium of our monthly statement, complete proceeds of our sales for the month, less productive labour, and less all expenses. This simplified method enables us to dispatch our figures, even though the information is rather finely detailed, by the night of the second working day of each month. I thought some of you might possibly be interested in seeing the type of branch statement which we use, so have one with me which I would be glad to have you examine.

This brings to a conclusion my efforts to give you some idea of our procedures. I realize there may be many points of interest upon which I have not touched, and if any of you have any questions

## COST AND MANAGEMENT

which you would like to ask I will do my utmost to answer them. I have enjoyed attending your meeting—particularly the dinner—and I desire to express my appreciation of being given this opportunity of representing my organization at one of your gatherings. We feel we hold a position of some importance in Winnipeg's industrial life; that we have a plant containing many points of interest to the average individual, and, therefore, I take this opportunity of extending to each member of your society, an invitation to visit our plant on Portage Avenue. I will consider it a privilege to personally conduct you through our assembly.

## A System of Guaranteed Employment

*Director of Economics, Westdale Commercial School, Hamilton  
(Extracts from an article in Industrial Canada, August, 1932)*

THE prosperity of Canada is not a tangible asset that may be handled as a unit; it is composed of the combined prosperity of every individual business enterprise in the entire Dominion. So also the depression should not be considered only in general terms, but in terms of its effect on each business organization.

Statistics from the Canada Year Book show that in 1929 there were 23,597 manufacturing establishments, 6,296 branch banks, 140,887,903 acres of occupied farm land, 587 central electric stations, 1,325 flour mills, etc. The successes and failures of these thousands of enterprises determine the success or failure of the Canadian business community. Thus we should consider our national problems from the standpoint of the individual man. We are heartily in favour of business conferences, trade parleys, and national economic discussions, but such organizations are unwidely, and wasteful of much time and effort. Instead of waiting for the Imperial Conference, for example, to solve all our problems, we might work our way out of the present difficulties by individual effort.

If every business man solved his own problem of unemployment, there would be no need for a national or municipal relief programme. Canada's most serious problem is seasonal unemployment. The following table shows that every year there are fewer men employed in the fall and winter months than in the summer months. This condition exists even during boom years, such as 1928-29.

Index numbers of employment as reported by employers, for 1929 and 1930.

	1929	1930	1931
Jan. 1 .....	109.1	111.2	101.7
Feb. 1 .....	110.5	111.6	100.7
March 1 .....	111.4	110.2	102.2
April 1 .....	110.4	107.8	99.7
May 1 .....	116.2	111.4	102.2
June 1 .....	122.2	116.5	103.6
July 1 .....	124.7	118.8	103.8
Aug. 1 .....	127.8	118.8	105.2
Sept. 1 .....	126.8	116.6	107.1
Oct. 1 .....	125.6	116.2	103.9
Nov. 1 .....	124.6	112.9	103.0
Dec. 1 .....	119.1	108.5	99.1

## A SYSTEM OF GUARANTEED EMPLOYMENT

Note that the index number of employment which reached its peak on August 1, 1929, at 127.8 had dropped to 111.2 by January 1, 1930. By the following July the index rose to its peak for 1930 at 118.8. The index at December 1, 1931, was only 99.1 as compared with 107.1 at September 1, 1931.

The most marked variations are found in logging, construction of various kinds, shipping and stevedoring. These activities depend entirely on climatic conditions and are so unavoidably seasonal that no amount of planning ahead, or spreading out the work will lessen them. Winter building and construction work and the manufacturing of stock during the slack season should aid greatly in reducing employment variability. Such activity—as the canning of fruits and vegetables must depend upon the crop and it is almost impossible to spread the work over other seasons. Retail trade employment reaches its peak during the Christmas season and it would seem impossible to regulate the yearly "rush."

### Seasonal Variation in Employment According to Cities

Windsor .....	64.5
Quebec (city) .....	20.4
Ottawa .....	19
Montreal .....	17.8
Vancouver .....	15.5
Hamilton .....	14.4
Winnipeg .....	11.6
Toronto .....	10

The seriousness of the situation is revealed by figures provided by Professor H. Michell, of McMaster University. He states that an average seasonal variation for all industries in Canada taken over a nine-year period, is 14 per cent. That means that for every 100 workers employed in the summer will only be 86 in the winter. The variation in employment activity in various occupations is seen in the following table:

### Seasonal Variation

Logging .....	106
Railway Construction .....	72
Construction and Maintenance .....	67
Building .....	54
Shipping and stevedoring .....	45
Lumber and produce .....	41
Plant products, edible .....	29
Land vehicles .....	24
Iron and Steel products .....	20
Retail Trade .....	17
Coal Mining .....	15
Transportation .....	14
Garment Making .....	13
Street Railways and Cartage .....	13
Steam Railways .....	11
Textiles .....	10
Pulp and Paper Products .....	9
All Industries .....	14

Our production system is irregular and consequently inefficient. Our factories work overtime some months and lie idle the rest of the year; our transportation facilities are taxed to capacity during some seasons and are almost unused during others; every winter our country is burdened with the support of men who when they work,

## COST AND MANAGEMENT

earn (and spend) more than average wages. The present recurring periods of unemployment diminish profits, inconvenience the customer, weaken the state and cause untold suffering and anxiety to the worker. (This seasonal unemployment continues regardless of bloom or depression.)

It will be noticed that sometimes demand for goods, i.e. orders, is so great that production does not keep pace. The customer finds himself in the position of desiring stock and not being able to obtain it. The manufacturer proceeds to remedy the situation by having his factory and office staffs work overtime to increase production. After a period of overtime the factory and office workers become tired and irritated, and, consequently, less efficient. In the meantime, orders have fallen off and the manufacturer is creating a surplus which, since he cannot sell, must be stored in a warehouse. He now has more stock than he needs so he lays off hands until a new demand causes the cycle to operate again. This intermittent employment is a real hardship on the worker, and provides the country with an unnecessary relief burden. A single man may live in reasonable comfort on \$20.00 a week. Many trades and manufacturing concerns provide only six months work each year. The average worker earning \$40.00 a week during the six months he works, spends up to the limit of his income and is thus left practically destitute during the remaining six months. A much steadier and consequently a healthier condition of industry would result if this man were given year-round work at \$20.00 per week. The yearly wage is the same, but the distribution is vastly different. Is there any way in which we can guarantee our men steady work, even at a lower weekly wage, Let me quote:

"For several years following the war, the operation of the plants of Procter & Gamble Company was quite irregular and men were repeatedly laid off for periods from one week to one month, with the accompanying anxiety and privation to them and their families. The company was concerned by the condition of its employees and determined, if possible, to change those conditions that subjected them to the evils of irregular employment. The company therefore decided that, if possible, it would so regulate its business that regularity of employment could be assured, and in August, 1923, inaugurated the present system of Guaranteed Employment, having first proved for a period of eighteen months' operation that such a plan was practical."

### Procter & Gamble Plan

The plan of the Procter & Gamble Company is briefly as follows: They estimate sales a year ahead. Then they divide the production into 49 weeks. This gives a uniform weekly production. Since sales and shipment are never uniform, the surplus is stored in warehouses when production exceeds shipments and is drawn from those warehouses when shipments are in excess of production.

Every firm obtains records from its sales department, but how often are these records used? Many of the more progressive firms estimate quite accurately the probable market for their goods. On the basis of such groundwork every business man should be able to go to his sales department and say, "We no longer want your records for mere routine purposes. We expect you to estimate your sales in the coming year, and on the basis of that estimate we shall regulate our production." This means that we must analyze our business more carefully and scrutinize every detail in the entire organization, nor for the mere purpose of analysis and scrutiny, but with the distinct object of co-ordinating research, advertising, selling,

## A SYSTEM OF GUARANTEED EMPLOYMENT

warehousing, distribution and management, in such a way as to provide regularity of production and consequently of employment.

We must not assume that the introduction and maintenance of such a plan may be accomplished entirely without work or friction. The plan must be flexible enough to allow for possible error in production, and to allow for adjustment to changing conditions. After the production schedule is set the estimates must be checked over carefully month by month. Such a scheme as suggested above has been tried with apparent success by the Procter & Gamble Company.

A guaranteed employment plan may be expected to show the following advantages.

1. The business man is able to line up his productive process on the most economical basis. The purchasing department, for example, will be greatly assisted in their work, for the executive must now calculate raw material requirements a year ahead. This assistance to the purchasing department has probably never before been given.

2. Since the cost of production, distribution and sale of the product is now carefully analyzed, and since the value of records, advertising and display is minutely considered, the accounting system becomes more efficient. If the information is recorded in the form of a chart, it shows at a glance how much expense will be incurred and how great a profit may be expected at any given time. Furthermore, since the plan is checked carefully each month, one may readily ascertain if the work of any department is falling down.

3. Control of production means minimum of waste in the handling of raw and finished materials, and a minimum of wear and tear on plant and office equipment.

4. It is obvious that any scheme which provides continuous employment at a steady wage is a benefit to the employee. He is relieved from fear and anxiety regarding his job and may plan his life so as to make something of it.

5. A man who is in continual fear of losing his job or who is under the constant strain of vainly trying to meet the expenses of living is in no fit mood to perform his daily work efficiently. Thus, if your workers have confidence in you and are secure in the knowledge of a permanent job, they will do far more efficient work and will be in a better frame of mind to suggest improvements and to show initiative.

### Management Derives Benefit

"If a plan could be worked out, even though it does not affect 100 per cent of a business, wherein steady employment can be made effective, you will probably find that management is benefited, at least as much if not more than the employee. While it may be necessary for the Government to change some of its laws so that industry as a whole can regulate production among themselves so as to avoid the terrific peaks and valleys in production, I do not think we have to wait for that. We can be working with our various plans suitable to our various businesses, and then when this feature is clarified, as I feel it must be, we will be in better shape than ever to handle our business on some basis that assures our men of regular jobs."

If each business firm could solve its own employment problem, there would be no need for an expensive national and municipal relief programme. It is a problem for the individual business man.

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Dancing Partner: "Do you find it difficult to keep in time?"  
He: "No, but the music puts me out."

## CHAPTER NOTES

### HAMILTON CHAPTER

Reported by R. Dawson, Secretary-Treasurer

Hamilton Chapter held their second annual golf tournament at the Waterdown Golf Course on Wednesday, August 31st, and needless to say the members and their friends thoroughly enjoyed themselves. The game was followed by a dinner in the clubhouse and everyone did full justice to the meal served by the club chef. Following the dinner, prizes were distributed and Chairman A. E. Keen gave a brief outline of the proposed activities of the Chapter during the coming season.

The Dominion president, Mr. L. A. Peto, will be the opening speaker on September 21st when he will speak at the Wentworth Arms Hotel on the subject, "Problems and Opportunities in Business". A fine program has been outlined for the season and the membership committee have set a real goal as their objective. A long pull and a strong pull together will work wonders for the chapter and the complete co-operation of every member is asked for in order to make the coming season a banner one.

The prize winners in connection with the annual golf tournament were: Low net, W. Furneaux; low gross, F. Moffatt; high gross, G. E. F. Smith; high score on one hole, S. E. LeBrock; best average player, A. E. Keen; best visitors score, A. Bedwell.

"I'm cutting quite a figure," aid the chorus girl as she sat on a broken bottle.

\* \* \* \* \*

Guide: "This, sir, is the leaning tower of Pisa."

Tourist: "Pisa! Let me think. No, that does not sound like the contractor's name who built my garage, but it looks like his work."

\* \* \* \* \*

"How is the efficiency expert coming on at your office, Dick?"

"Fine. He was such a success for the boss that we employees hired him for a week."

"You fellows hired him?"

"Yes, with great success. He showed up a new way to beat the time clock, taught us a lot of brand new excuses for being late and how to hook the boss's cigars without being found out."

\* \* \* \* \*

"What beats a nice, thick Turkish Carpet?" asks an advertisement.

"A husband usually."

\* \* \* \* \*

"What makes you think a celebration is taking place?"

"Why, can't you see for yourself that nearly the whole house is lit?"

## THE FRIENDLY CRITIC

### THE FRIENDLY CRITIC

(*Thoughts on observing "The Prospect of 'Discovery'" in August Cost and Management, page 246*)

Oh! pestilent printer! see thy error loom  
In large black letters on the fair white page!  
Unhappy wight, say, what shall be thy doom  
For filling thus the Doctor's heart with rage?

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And yet, perchance, unwittingly didst thou  
In optimistic mood that error make.  
Like the good Doctor, I was cross—yet now  
I feel inclined to pardon thy mistake!

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For I have read the article in question,  
And made, methinks, a wonderful discovery;  
Each trenchant sentence . . . every wise suggestion . . .  
May bring about Discovery of Recovery!

Montreal,  
August 16th, 1932.

HERBERT E. SKEATES

Dancing is a great thing for bringing young people together, and that was how Percival Pond discovered his heart's desire.  
They danced just once, but from the first moment Percival knew she was "the only girl in the world" for him.  
He though he might as well tell her.  
"I could face death dancing with you," he whispered.  
The girl blushed.  
"You probably will if my husband takes a dislike to you," she answered, sweetly.

\* \* \* \* \*

Cop: "What in the world are you looking for?"  
Man: "I'm looking for my pocket knife which I lost down the street there."  
Cop: "Then why don't you go back and look for it where you lost it?"  
Man: "Because there's more light here."

\* \* \* \* \*

The doctor was puzzled.  
"You ought to be getting well by now," he said. "Have you carried out my instructions all right?"  
"Well, doctor," said the patient. "I've done most of them, but I can't take that two-mile walk every morning as you ordered. I get too dizzy."

"What do you mean 'dizzy'?" asked the doctor.  
"Well, sir," said the patient, "I must have forgotten to tell you. I'm a lighthouse-keeper."

\* \* \* \* \*

"Your wife likes to go South every year, eh?"

"Yeah; she loves to spend the winter in the rotogravure section."

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Her.—“I don't know whether to buy a brass or mahogany bed.”

Him.—“Lady, you can't go wrong on a brass bed.”

She took the mahogany one.

\* \* \* \* \*

Tourists (having looked over historic castle, to butler)—We've made a stupid mistake. I tipped his lordship instead of you.

Butler—That's awkward. I'll never get it now.

\* \* \* \* \*

An insurance agent had outstayed his welcome in a merchant's office, and took no notice of the many broad hints that he was making himself a nuisance. At last his victim got him by the scruff of the neck and pitched him downstairs.

The man got up, retrieved his hat, and turning to the man at the top of the stairs he said calmly, “Joking apart, what about that insurance policy?”

\* \* \* \* \*

“Well, I've lost another pupil!” said the professor, as his glass eye fell on the floor.

\* \* \* \* \*

A tourist travelling in the Rocky Mountains was introduced to an old hunter who claimed to have killed no fewer than a hundred bears.

“Bill,” said the introducer, “this feller wants to hear of some narrar escapes you had from bears.”

“Young man,” said Bill, “if thar's been any narrar escapes, the bears had 'em.”

